

Annex 6 Part I, 9th Edition Amendment 36

International Commercial Air Transport — Aeroplanes

| Topic | Provision | | Comment |
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| Flight Data Analysis Programme | <p>3.3.6 An operator of an aeroplane of a maximum certificated take-off mass in excess of 27 000 kg shall establish and maintain a flight data analysis programme as part of its safety management system.</p> <p><i>Note.— An operator may contract the operation of a flight data analysis programme to another party while retaining overall responsibility for the maintenance of such a programme.</i></p> | | |
| Flight Data Recorder (FDR) | <p>1.1 The flight recorder containers shall:</p> <ul style="list-style-type: none"> a) be painted a distinctive orange or yellow colour; b) carry reflective material to facilitate their location; and c) have securely attached an automatically activated underwater locating device operating at a frequency of 37.5 kHz. At the earliest practicable date, but not later than 1 January 2018, this device shall operate for a minimum of 90 days. | | Annex 6 Part I Appendix 8 |
| | <p>6.3.1.2.1 All turbine-engined aeroplanes of a maximum certificated take-off mass of 5 700 kg or less for which the application for type certification is submitted to a Contracting State on or after 1 January 2016 shall be equipped with:</p> <ul style="list-style-type: none"> a) a Type II FDR; or b) a Class C AIR capable of recording flight path and speed parameters displayed to the pilot(s); or c) an ADRS capable of recording the essential parameters defined in Table A9-3 of Appendix 9. | | |

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| | 6.3.1.2.3 All aeroplanes of a maximum certificated take-off mass of over 27 000 kg for which the individual certificate of airworthiness is first issued on or after 1 January 1989 shall be equipped with a Type I FDR. | | |
| | 6.3.1.2.4 All aeroplanes of a maximum certificated take-off mass of over 5 700 kg, up to and including 27 000 kg, for which the individual certificate of airworthiness is first issued on or after 1 January 1989 , shall be equipped with a Type II FDR. | | |
| | 6.3.1.2.11 All aeroplanes of a maximum certificated take-off mass of over 5 700 kg for which the individual certificate of airworthiness is first issued after 1 January 2005 shall be equipped with a Type IA FDR. | | |
| | 6.3.1.2.12 All aeroplanes which are required to record normal acceleration, lateral acceleration and longitudinal acceleration for which the application for type certification is submitted to a Contracting State on or after 1 January 2016 and which are required to be fitted with an FDR shall record those parameters at a maximum sampling and recording interval of 0.0625 seconds | | |

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| | <p>6.3.1.2.13 All aeroplanes which are required to record pilot input and/or control surface position of primary controls (pitch, roll, yaw) for which the application for type certification is submitted to a Contracting State on or after 1 January 2016 and which are required to be fitted with an FDR shall record those parameters at a maximum sampling and recording interval of 0.125 seconds.</p> <p><i>Note.— For aeroplanes with control systems in which movement of a control surface will back drive the pilot's control, "or" applies. For aeroplanes with control systems in which movement of a control surface will not back drive the pilot's control, "and" applies. In aeroplanes with independent moveable surfaces, each surface needs to be recorded separately. In aeroplanes with independent pilot input on primary controls, each pilot input on primary controls needs to be recorded separately.</i></p> | | |
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6.3.1.2.13 All aeroplanes which are required to record pilot input and/or control surface position of primary controls (pitch, roll, yaw) for which the application for type certification is submitted to a Contracting State **on or after 1 January 2016** and which are required to be fitted with an FDR shall record those parameters at a maximum sampling and recording interval of 0.125 seconds.

Note.— For aeroplanes with control systems in which movement of a control surface will back drive the pilot's control, "or" applies. For aeroplanes with control systems in which movement of a control surface will not back drive the pilot's control, "and" applies. In aeroplanes with independent moveable surfaces, each surface needs to be recorded separately. In aeroplanes with independent pilot input on primary controls, each pilot input on primary controls needs to be recorded separately.

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| | 6.3.1.3.6 The use of magnetic tape FDRs shall be discontinued by 1 January 2016. | | |
| | The flight recorder containers shall have securely attached an automatically activated underwater locating device operating at a frequency of 37.5 kHz. At the earliest practicable date, but not later than 1 January 2018, this device shall operate for a minimum of 90 days. | | From Appendix C to Chapter 6. |
| Cockpit Voice Recorder (CVR) | 6.3.2.1.1 All turbine-engined aeroplanes of a maximum certificated take-off mass of over 2 250 kg, up to and including 5 700 kg, for which the application for type certification is submitted to a Contracting State on or after 1 January 2016 and required to be operated by more than one pilot shall be equipped with either a CVR or a CARS | | |
| | 6.3.2.1.3 All aeroplanes of a maximum certificated take-off mass of over 5 700 kg for which the individual certificate of airworthiness is first issued on or after 1 January 2003 shall be equipped with a CVR capable of retaining the information recorded during at least the last two hours of its operation. | | |
| | 6.3.2.2.1 The use of magnetic tape and wire CVRs shall be discontinued by 1 January 2016. | | |
| | 6.3.2.3.2 From 1 January 2016, all CVRs shall be capable of retaining the information recorded during at least the last two hours of their operation. | | |

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| | <p>6.3.2.4 <i>Cockpit voice recorder alternate power</i></p> <p>6.3.2.4.1 An alternate power source shall automatically engage and provide ten minutes, plus or minus one minute, of operation whenever aeroplane power to the recorder ceases, either by normal shutdown or by any other loss of power. The alternate power source shall power the CVR and its associated cockpit area microphone components. The CVR shall be located as close as practicable to the alternate power source.</p> <p><i>Note 1.— “Alternate” means separate from the power source that normally provides power to the CVR. The use of aeroplane batteries or other power sources is acceptable provided that the requirements above are met and electrical power to essential and critical loads is not compromised.</i></p> <p><i>Note 2.— When the CVR function is combined with other recording functions within the same unit, powering the other functions is allowed.</i></p> <p>6.3.2.4.2 All aeroplanes of a maximum certificated take-off mass of over 27 000 kg for which the application for type certification is submitted to a Contracting State on or after 1 January 2018 shall be provided with an alternate power source, as defined in 6.3.2.4.1, that powers the forward CVR in the case of combination recorders.</p> | | |
| | <p>6.3.3.1.1 All aeroplanes for which the individual certificate of airworthiness is first issued on or after 1 January 2016, which utilize any of the data link communications applications listed in 5.1.2 of Appendix 9 and are required to carry a CVR, shall record on a flight recorder the data link communications messages.</p> | | |
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| Data Link Recorder System (CVR/DLRs) | <p>6.3.3.1.2 All aeroplanes which are modified on or after 1 January 2016 to install and utilize any of the data link communications applications listed in 5.1.2 of Appendix 9 and are required to carry a CVR shall record on a flight recorder the data link communications messages.</p> <p><i>Note 1.— Data link communications are currently conducted by either ATN-based or FANS 1/A-equipped aircraft.</i></p> <p><i>Note 2.— A Class B AIR could be a means for recording data link communications applications messages to and from the aeroplanes where it is not practical or is prohibitively expensive to record those data link communications applications messages on FDR or CVR</i></p> | | |
| | <p>6.3.3.2 <i>Duration</i></p> <p>The minimum recording duration shall be equal to the duration of the CVR.</p> | | |
| | <p>6.3.3.3 <i>Correlation</i></p> <p>Data link recording shall be able to be correlated to the recorded cockpit audio.</p> | | |
| | <p>6.3.4.3 <i>Continued serviceability</i></p> <p>Operational checks and evaluations of recordings from the flight recorder systems shall be conducted to ensure the continued serviceability of the recorders.</p> <p><i>Note.— Procedures for the inspections of the flight recorder systems are given in Appendix 9.</i></p> | | |

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| Combi-Recorders | <p>6.3.4.5.2 All aeroplanes of a maximum certificated take-off mass of over 15 000 kg for which the application for type certification is submitted to a Contracting State on or after 1 January 2016, and which are required to be equipped with both a CVR and an FDR, shall be equipped with two combination recorders (FDR/CVR). One recorder shall be located as close to the cockpit as practicable and the other recorder located as far aft as practicable.</p> | | |
| Underwater Locator Beacon (ULB) | <p>6.5.3.1 In addition to the equipment prescribed in 6.5.1 or 6.5.2 whichever is applicable, the following equipment shall be installed in all aeroplanes when used over routes on which the aeroplane may be over water and at more than a distance corresponding to 120 minutes at cruising speed or 740 km (400 NM), whichever is the lesser, away from land suitable for making an emergency landing in the case of aircraft operated in accordance with 5.2.9 or 5.2.10, and 30 minutes or 185 km (100 NM), whichever is the lesser, for all other aeroplanes:</p> <p>.....</p> <p>.....</p> <p>c) at the earliest practicable date but not later than 1 January 2018, on all aeroplanes of a maximum certificated take-off mass of over 27 000 kg, a securely attached underwater locating device operating at a frequency of 8.8 kHz. This automatically activated underwater locating device shall operate for a minimum of 30 days and shall not be installed in wings or empennage.</p> | | |

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| Ground Proximity Warning System (GPWS) | 6.15.1 All turbine-engined aeroplanes of a maximum certificated take-off mass in excess of 5 700 kg or authorized to carry more than nine passengers shall be equipped with a ground proximity warning system. | | |
| | 6.15.2 All turbine-engined aeroplanes of a maximum certificated take-off mass in excess of 15 000 kg or authorized to carry more than 30 passengers shall be equipped with a ground proximity warning system which has a forward looking terrain avoidance function. | | |
| | 6.15.3 All turbine-engined aeroplanes of a maximum certificated take-off mass in excess of 5 700 kg or authorized to carry more than nine passengers, for which the individual certificate of airworthiness is first issued on or after 1 January 2004 , shall be equipped with a ground proximity warning system which has a forward looking terrain avoidance function. | | |
| | 6.15.4 From 1 January 2007 , all turbine-engined aeroplanes of a maximum certificated take-off mass in excess of 5 700 kg or authorized to carry more than nine passengers shall be equipped with a ground proximity warning system which has a forward looking terrain avoidance function. | | |
| | 6.15.6 From 1 January 2007 , all piston-engined aeroplanes of a maximum certificated take-off mass in excess of 5 700 kg or authorized to carry more than nine passengers shall be equipped with a ground proximity warning system which provides the warnings in 6.15.8 a) and c), warning of unsafe terrain clearance and a forward looking terrain avoidance function. | | [6.15.8 A ground proximity warning system shall provide, unless otherwise specified herein, warnings of the following circumstances: a) excessive descent rate; b) excessive terrain closure rate; c) excessive altitude loss after take-off or go-around;] |
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| <p>Emergency Locator Transmitter (ELT)</p> | <p>6.17 Emergency locator transmitter (ELT)</p> <p>6.17.1 Recommendation.— <i>All aeroplanes should carry an automatic ELT.</i></p> <p>6.17.2 Except as provided for in 6.17.3, from 1 July 2008, all aeroplanes authorized to carry more than 19 passengers shall be equipped with at least one automatic ELT or two ELTs of any type.</p> <p>6.17.3 All aeroplanes authorized to carry more than 19 passengers for which the individual certificate of airworthiness is first issued after 1 July 2008 shall be equipped with at least two ELTs, one of which shall be automatic.</p> <p>6.17.4 Except as provided for in 6.17.5, from 1 July 2008, all aeroplanes authorized to carry 19 passengers or less shall be equipped with at least one ELT of any type.</p> <p>6.17.5 All aeroplanes authorized to carry 19 passengers or less for which the individual certificate of airworthiness is first issued after 1 July 2008 shall be equipped with at least one automatic ELT.</p> <p>6.17.6 ELT equipment carried to satisfy the requirements of 6.17.1, 6.17.2, 6.17.3, 6.17.4 and 6.17.5 shall operate in accordance with the relevant provisions of Annex 10, Volume III.</p> <p><i>Note.— The judicious choice of numbers of ELTs, their type and placement on aircraft and associated floatable life support systems will ensure the greatest chance of ELT activation in the event of an accident for aircraft operating over water or land, including areas especially difficult for search and rescue. Placement of transmitter units is a vital factor in ensuring optimal crash and fire protection. The placement of the control and switching devices (activation monitors) of automatic fixed ELTs and their associated operational procedures will also take into consideration the need for rapid detection of inadvertent activation and convenient manual switching by crew members.</i></p> | | <p>See Annex10 Volume V 2nd Edition Amendment 87 2.1.3</p> |
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| <p>Airborne Collision Avoidance System (ACAS II)</p> | <p>6.18 Aeroplanes required to be equipped with an airborne collision avoidance system (ACAS II) 6.18.1 From 1 January 2003, all turbine-engined aeroplanes of a maximum certificated take-off mass in excess of 15 000 kg or authorized to carry more than 30 passengers shall be equipped with an airborne collision avoidance system (ACAS II). 6.18.2 From 1 January 2005, all turbine-engined aeroplanes of a maximum certificated take-off mass in excess of 5 700 kg or authorized to carry more than 19 passengers shall be equipped with an airborne collision avoidance system (ACAS II). 6.18.3 Recommendation.— <i>All aeroplanes should be equipped with an airborne collision avoidance system (ACAS II).</i> 6.18.4 An airborne collision avoidance system shall operate in accordance with the relevant provisions of Annex 10, Volume IV.</p> | | <p>See Annex 10 Volume IV 4.5.3.1 4.5.3.2</p> |
| <p>Performance – Based Navigation (PBN)</p> | <p>7.2.2 For operations where a navigation specification for performance-based navigation has been prescribed, an aeroplane shall, in addition to the requirements specified in 7.2.1: a) be provided with navigation equipment which will enable it to operate in accordance with the prescribed navigation specification(s); and b) be authorized by the State of the Operator for such operations</p> | | |
| <p>Reduced Vertical Separation (RVSM)</p> | <p>7.2.7 The State of the Operator that has issued an RVSM approval to an operator shall establish a requirement which ensures that a minimum of two aeroplanes of each aircraft type grouping of the operator have their height-</p> | | |

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| | <p>keeping performance monitored, at least once every two years or within intervals of 1 000 flight hours per aeroplane, whichever period is longer. If an operator aircraft type grouping consists of a single aeroplane, monitoring of that aeroplane shall be accomplished within the specified period.</p> | | |
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| Ground Proximity Warning System (GPWS) | 2.4.11.1 All turbine-engined aeroplanes of a maximum certificated take-off mass in excess of 5 700 kg or authorized to carry more than nine passengers shall be equipped with a ground proximity warning system which has a forward-looking terrain avoidance function | | |
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| | <p>2.4.11.7 A ground proximity warning system installed in turbine-engined aeroplanes of a maximum certificated takeoff mass in excess of 5 700 kg or authorized to carry more than nine passengers for which the individual certificate of airworthiness was first issued after 1 January 2011 shall provide, as a minimum, warnings of at least the following circumstances:</p> <ul style="list-style-type: none"> a) excessive descent rate; b) excessive terrain closure rate; c) excessive altitude loss after take-off or go-around; d) unsafe terrain clearance while not in landing configuration; <ul style="list-style-type: none"> 1) gear not locked down; 2) flaps not in a landing position; and e) excessive descent below the instrument glide path. | | |
| <p>Emergency Locator Transmitter (ELT)</p> | <p>2.4.12.2 Except as provided for in 2.4.12.3, from 1 July 2008, all aeroplanes shall be equipped with at least one ELT of any type.</p> <p>2.4.12.3 All aeroplanes for which the individual certificate of airworthiness is first issued after 1 July 2008 shall be equipped with at least one automatic ELT.</p> <p>2.4.12.4 ELT equipment carried to satisfy the requirements of 2.4.12.1, 2.4.12.2 and 2.4.12.3 shall operate in accordance with the relevant provisions of Annex 10, Volume III.</p> | | <p>See Annex10 Volume V 2nd Edition Amendment 87 2.1.3</p> |

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| HUD/EVS/CVS | Where aeroplanes are equipped with HUD and/or EVS, the use of such systems to gain operational benefits shall be approved by the State of Registry. <i>Note.— Guidance on HUD and EVS is contained in Attachment J to Annex 6, Part I.</i> | | |
| Flight Data Recorder (FDR) | 2.4.16.1.2.2 All aeroplanes for which the application for type certification is submitted to a Contracting State on or after 1 January 2016 , and which are required to be fitted with an FDR, shall record the following parameters at a maximum recording interval of 0.125 seconds: — Pilot input and/or control surface position – primary controls (pitch, roll, yaw). | | |
| | 2.4.16.1.3.3 The use of analogue FDRs using frequency modulation (FM) shall be discontinued by 1 January 2012 . | | |
| | 2.4.16.1.3.6 The use of magnetic tape FDRs shall be discontinued by 1 January 2016 . | | |
| Cockpit Voice Recorder (CVR) | 2.4.16.2.2.1 The use of magnetic tape and wire CVRs shall be discontinued by 1 January 2016 . | | |
| | 2.4.16.2.3.2 From 1 January 2016, all CVRs shall be capable of retaining the information recorded during at least the last two hours of their operation | | |

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| Data Link Recorder System (DLRS/CVR) | 2.4.16.3.1.1 All aeroplanes for which the individual certificate of airworthiness is first issued on or after 1 January 2016 , which utilize any of the data link communications applications listed in 5.1.2 of Appendix 2.3 and are required to carry a cockpit voice recorder (CVR), shall record on a flight recorder all data link communications messages. | | |
| | 2.4.16.3.1.2 All aeroplanes which are modified on or after 1 January 2016 to install and utilize any of the data link communications applications listed in 5.1.2 of Appendix 2.3 and are required to carry a CVR shall record on a flight recorder the data link communications messages | | |
| | 2.4.16.3.2 Duration The minimum recording duration shall be equal to the duration of the CVR. | | |
| | 2.4.16.3.3 Correlation Data link recording shall be able to be correlated to the recorded cockpit audio | | |

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| Performance – Based Navigation (PBN) | <p>2.5.2.2 For operations where a navigation specification for performance-based navigation has been prescribed, an aeroplane shall, in addition to the requirements specified in 2.5.2.1:</p> <ul style="list-style-type: none">a) be provided with navigation equipment which will enable it to operate in accordance with the prescribed navigation specification(s); andb) be authorized by the State of Registry for such operations. <p><i>Note.— Information on performance-based navigation, and guidance concerning the implementation and operational approval process, are contained in the Performance-based Navigation Manual (Doc 9613). This document also contains a comprehensive list of references to other documents produced by States and international bodies concerning navigation systems.</i></p> | | |
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| | <p>2.5.2.3 For flights in defined portions of airspace where, based on regional air navigation agreement, minimum navigation performance specifications (MNPS) are prescribed, an aeroplane shall be provided with navigation equipment which:</p> <ul style="list-style-type: none">a) continuously provides indications to the flight crew of adherence to or departure from track to the required degree of accuracy at any point along that track; andb) has been authorized by the State of Registry for the MNPS operations concerned. <p><i>Note.— The prescribed minimum navigation performance specifications and the procedures governing their application are published in the Regional Supplementary Procedures (Doc 7030).</i></p> | | |
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| Reduced Vertical Separation (RVSM) | <p>2.5.2.7 The State of Registry that has issued an RVSM approval to an owner/operator shall establish a requirement which ensures that a minimum of two aeroplanes of each aircraft type grouping of the owner/operator have their heightkeeping performance monitored, at least once every two years or within intervals of 1 000 flight hours per aeroplane, whichever period is longer. If an owner/operator aircraft type grouping consists of a single aeroplane, monitoring of that aeroplane shall be accomplished within the specified period.</p> <p><i>Note.— Monitoring data from any regional monitoring programme established in accordance with Annex 11, 3.3.5.2, may be used to satisfy the requirement.</i></p> | | |
| Flight Data Recorder (FDR) | <p>3.6.3.1.1.1 All aeroplanes of a maximum certificated take-off mass of over 5 700 kg for which the individual certificate of airworthiness is first issued on or after 1 January 2005 shall be equipped with a Type IA FDR.</p> | | |
| | <p>3.6.3.1.1.2 All aeroplanes of a maximum certificated take-off mass of over 27 000 kg for which the individual certificate of airworthiness is first issued on or after 1 January 1989 shall be equipped with a Type I FDR.</p> | | |
| Cockpit Voice Recorder (CVR) | <p>3.6.3.2.1.1 All turbine-engined aeroplanes of a maximum certificated take-off mass of over 5 700 kg for which the application for type certification is submitted to a Contracting State on or after 1 January 2016 and required to be operated by more than one pilot shall be equipped with a CVR.</p> | | |
| | <p>3.6.3.2.1.2 All aeroplanes of a maximum certificated take-off mass of over 27 000 kg for which the individual certificate of airworthiness is first issued on or after 1 January 1987 shall be equipped with a CVR.</p> | | |

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| Airborne Collision Avoidance System (ACAS II) | <p>3.6.10.2 All turbine-engined aeroplanes of a maximum certificated take-off mass in excess of 15 000 kg or authorized to carry more than 30 passengers, for which the individual airworthiness certificate is first issued after 1 January 2007, shall be equipped with an airborne collision avoidance system (ACAS II).</p> | | <p>See Annex 10 Volume IV 4.3.5.3.1 4.3.5.3.2</p> |
| | <p>4.3.5.3.1 New ACAS installations after 1 January 2014 shall monitor own aircraft's vertical rate to verify compliance with the RA sense. If non-compliance is detected, ACAS shall stop assuming compliance, and instead shall assume the observed vertical rate.</p> <p><i>Note 1.— This overcomes the retention of an RA sense that would work only if followed. The revised vertical rate assumption is more likely to allow the logic to select the opposite sense when it is consistent with the non-complying aircraft's vertical rate.</i></p> <p><i>Note 2.— Equipment complying with RTCA/DO-185 or DO-185A standards (also known as TCAS Version 6.04A or TCAS Version 7.0) do not comply with this requirement.</i></p> <p><i>Note 3.— Compliance with this requirement can be achieved through the implementation of traffic alert and collision avoidance system (TCAS) Version 7.1 as specified in RTCA/DO-185B or EUROCAE/ED-143.</i></p> <p>4.3.5.3.2 Recommendation.— All ACAS should be compliant with the requirement in 4.3.5.3.1.</p> <p>4.3.5.3.3 After 1 January 2017, all ACAS units shall comply with the requirements stated in 4.3.5.3.1.</p> | | |
| Emergency Locator Transmitter (ELT) | <p>2.1.3 From 1 January 2005, emergency locator transmitters carried in compliance with Standards of Annex 6, Parts I, II and III shall operate on both 406 MHz and 121.5 MHz.</p> | | <p>Annex10 Volume V 2nd Edition Amendment 87</p> |
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